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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,572	01/24/2002	Hideto Ohnuma	740756-2422	3447

22204 7590 12/12/2002

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EXAMINER

KENNEDY, JENNIFER M

ART UNIT	PAPER NUMBER
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2812

DATE MAILED: 12/12/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/053,572

Applicant(s)

OHNUMA, HIDETO

Examiner

Jennifer M. Kennedy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohtani et al. (U.S. Patent No. 5,966,596).

Ohtani et al. discloses the method of forming a semiconductor film comprising silicon (103), specifically amorphous silicon, over an insulating substrate (101), forming a chemical oxide film (see column 6, lines 55-64) on a surface of the semiconductor film comprising silicon as a pretreatment, and doping the semiconductor film comprising silicon with impurity ions, thus allowing channel doping, wherein the material including hydrogen is used as the ion source for the impurity ions (see column 8, lines 43-53).

Ohtani et al. discloses the chemical oxide film is formed by treatment with ozone water, hydrogen peroxide or by ozone treatment through ultraviolet irradiation in an atmosphere containing oxygen (see column 2, lines 44-46).

Ohtani et al. also discloses the method wherein a catalytic element of Ni, having the effect of accelerating crystallization is applied to the amorphous semiconductor film, and a heat treatment is conducted to form a crystalline semiconductor film (see column 7, lines 20-50).

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Ohtani et al. also discloses the semiconductor device could be a personal computer (see column 1, lines 24-25).

Ohtani et al. does not explicitly state that the pretreatment terminates dangling bonds on a surface of the semiconductor film with oxygen. However, as explained in the applicant's specification the termination of bonds in the present application occur with oxygen. The examiner points out that the pretreatment as taught by Ohtani to form the chemical oxide treats the surface of the substrate with oxygen (see column 2, lines 44-46), thus the pretreatment inherently terminates dangling bonds on the surface of the semiconductor film with oxygen.

In re claims 23, and 27, Ohtani et al. discloses the method of manufacturing a semiconductor device comprising the steps of:

- forming a semiconductor film (103) comprising silicon over an insulating substrate (101);

- forming a chemical oxide film (see column 6, lines 55-64) on a surface of the semiconductor film comprising silicon as a pretreatment;

- doping the semiconductor film comprising silicon with impurity ions (see column 8, lines 44-53), patterning the semiconductor film to form at least one active layer (107), forming a gate insulating film (110) over the active layer; and

- forming a gate electrode (111) over the semiconductor film with the gate insulating film interposed there between,

wherein the chemical oxide film is formed by a treatment with at least one material selected from the group of ozone water and a hydrogen peroxide solution (see column 6, lines 60-63).

Ohtani et al. also discloses the semiconductor device could be a personal computer (see column 1, lines 24-25).

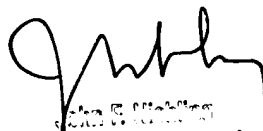
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Kennedy whose telephone number is (703) 308-6171. The examiner can normally be reached on Mon.-Fri. 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gml
jmk

December 6, 2002


John E. Niebling
Supervisory Patent Examiner
Technology Center 2800